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1940 FOREST INSECT SURVEY - INYO AND MONO NATIONAL FORESTS

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Forest Insect Laboratory
Berkeley, California
January 31, 1941

1940 FOREST INSECT SURVEY - INYO AND MONO NATIONAL FORESTS

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1940 FOREST INSECT SURVEY - INYO AND MONO NATIONAL FORESTS

INTRODUCTION

The 1940 survey of current insect conditions on the Inyo and Mono National Forests was made during the period September 15 to 20 inclusive. All costs of the survey, including transportation, were carried by the Forest Insect Laboratory, Berkeley, California.

The same areas were covered and the methods used were the same as in 1939, and in earlier surveys. The three permanent sample plots (Mammoth, Mono Craters, and Casa Diablo) on the Inyo, as well as the two plots (Hell Gate and Leavitt Meadow) on the Mono, were intensively cruised. For location of these sample plots and surrounding infestation areas reference is made to the maps attached to the survey report of December 14, 1939.

A general reconnaissance was made of timbered areas, exclusive of the White Mountains of the Inyo and the Sweetwater Mountains and Wellington Hills section of the Mono. This reconnaissance was extended to include the open ranges of the Owens River drainage of the Inyo and the Mono Lake Basin of the Mono where forage damaging insects had been active in previous years.

GENERAL INFESTATION CONDITIONS

No insect outbreaks were observed in any part of these forests, or in the open range regions. There was a slight increase in the number of trees infested by the Jeffrey pine beetle on the Mammoth and Mono Craters sample plots, but this increase does not appear to have any great significance. Conditions in the broad leaf species continue to improve. A sharp decline has occurred in infestations of both mountain pine beetle and needleminer in lodgepole pine. Infestations of the pine tip moth, Rhyacionia, in pinon pine in the Topaz Lake region remains about the same as that of last year. The centers of epidemic infestations of the Great Basin tent caterpillar on the open ranges has not, as predicted last year, spread to adjacent brush areas. It now appears that these nuclei will not be enlarged to epidemic proportions during next year, at least. Considerable damage has resulted from the work of the aspen borer, Saperda, in quaking aspen in several local resort areas, but is so far largely confined to trees on intensively used sites.

BARKBEETLE INFESTATIONS IN JEFFREY PINE

Current losses due to attacks by the Jeffrey pine beetle, Melanophila spp., and the emarginate engraver beetle, have slightly increased in the Mammoth and Mono Craters regions. However, the combined losses due to these beetles do not exceed an average of 12 trees per section throughout the 87,000 acres of Jeffrey pine forest and are decidedly below the normal barkbeetle losses for these stands. A tabulation of losses in Jeffrey pine showing infestation trends during the three year period, 1938 to 1940 inclusive, on the four sample plots, is shown in the following table:

Measured Plot Losses - 1938, 1939, 1940

Plot	Acres	1938			1939			1940*		
		No. Trees	Volume B.M.	BM per acre	No. Trees	Volume B.M.	BM per acre	No. Trees	Volume B.M.	BM per acre
Mammoth	430	14	36,310	85	1	1,640	4	6	7,010	16
Mono Craters	260	3	8,060	31	1	2,570	10	3	2,280	9
Hell Gate	80	1	1,950	24	0	0	0	2	870	11
Leavitt Meadow	60	0	0	0	0	0	0	0	0	0

* Visible loss to September only. Total loss cannot be determined until June 1941.

BARKBEETLE INFESTATIONS IN LODGEPOLE PINE

The mountain pine beetle, Dendroctonus monticolae, is still present in the lodgepole pine stands of the region. During 1940 its depredations have been slight and confined to a few recreational areas where the stands are largely composed of overmature trees. Such conditions are found at Mammoth Lakes, at Reversed Creek, and along Rock and Bishop Creeks, where the beetle persists in very limited numbers. These infestations are at such a low ebb that any measures designed to further reduce them would be unwarranted.

A local infestation of this beetle appeared in mountain pine at Mary's Lake in the Mammoth Lakes area where a total of 30 trees were killed during the year. Since this area is of high recreational value this incipient infestation should be watched and if losses continue at an increased rate control of the beetle should be undertaken.

TUSSOCK MOTH DAMAGE TO WHITE FIR

As in 1939 white fir trees defoliated by Oslar's tussock moth, Hemerocampa oslari, in the epidemic of 1934-1937 continued to die as a result of severe defoliation. The moth has long since disappeared from these stands although many trees in the old epidemic centers have not recovered from the effects of repeated defoliations. Examination of the check plot at Mammoth showed that 7 trees on this 5 acre plot died during 1940, three years after the last defoliation. A tabulation of loss data on this plot for three years following subsidence of the epidemic shows that 59 trees, or 36% of the total died during the three year period. The loss per year was as follows: 34 trees, 21 percent, died in 1938, the first year; 18 trees, 10 percent, died in 1939, the second year; and 7 trees, 4 percent, died in 1940, the third year. Thus mortality in the defoliated trees decreases as time goes on, so it is reasonable to expect that the effects of defoliation will soon be entirely dissipated. However, the magnitude of the losses that have already occurred are rather staggering when the plot loss data are applied to all the epidemic centers which totalled 15,000 acres. Such computation reveals that the loss sustained during the past three years amounted to a total of 489,000 trees.

NEEDLEMINER INFESTATIONS IN LODGEPOLE PINE

The infestations of the lodgepole pine needleminer, Recurvaria sp., which were assuming epidemic proportions in the stands at Sage Hen and Crooked Meadows, have not spread beyond the confines of the same areas infested in 1939. Some sections in these infested centers show severe defoliation with resultant loss of 60 to 75 percent of needles. Visible damage so far is confined to the terminals and tips of branches, many having died from the repeated defoliations. During 1940 this moth was active over an area of about 11,000 acres.

NEEDLEMINER INFESTATION IN PINON PINE

As reported last year, the pinon pine needleminer, Recurvaria sp., had largely disappeared from the Casa Diablo Mountain area. During 1940 there was a continued decline of this infestation. Very few caterpillars could be found in mined needles in September of this year. It is now evident that the recent epidemic cycle has run its course and has subsided. Severely defoliated trees, however, continue to pass out of the picture. Those only lightly defoliated are showing definite signs of recovery.

ASPEN BORER IN QUAKING ASPEN

Damage by the aspen borer, Saperda, is prevalent throughout the region covered by the survey. The native poplars, quaking aspen and black cottonwood, are attacked as well as the introduced species, Carolina poplar and Lombardy poplar. Open wounds are made by the developing larvae in both limbs and trunks, resulting in die back to the point of attack in the latter case. Spores of damaging fungi enter the trunks through these open wounds which eventually are fatal to the trees. Local recreational areas where the damage has been greatest are: Big Pine Creek, Whiskey Creek, Reversed Creek, and Twin Lakes. Unfortunately no known methods of control are applicable under extensive forest conditions.

TIP MOTH IN PINON PINE

Infestations of the pinon pine tip moth, Rhyacionia neomexicana, have continued without change in status in the nut pine stands. Principal centers of these infestations are, as before, at Topaz Lake and near Gardnerville. An area of about 20,000 acres is affected. The primary damage consists of dying terminals and partial loss of foliage, resulting in growth check and apple-tree crown form. Secondary injury consists of weakened tree vitality and susceptibility to attacks by barkbeetles and woodboring insects which cause the death of attacked trees. No practical means of control have been developed which are economically feasible over extensive forest areas.

GREAT BASIN TENT CATERPILLAR ON OPEN RANGES

The extent of the Great Basin tent caterpillar, Malacosoma fragilis, infestations during the year was approximately the same as was reported last year, i.e., throughout the open ranges of both forests. As before, feeding was largely confined to bitter brush, Purshia tridentata. Local areas where infestation was heaviest in 1939 were examined. These centers are located in Long Valley, Adobe Valley, Benton, Casa Diablo Mountain, and the brush areas surrounding Mono Lake. A comparison of 1939 and 1940 tents on random check plots in these areas showed that the infestation decreased 60 percent since 1939. The present status of this defoliator is decidedly endemic.

RECOMMENDATIONS

Since insect infestations on the survey area during the year declined, or are decidedly endemic, with resultant losses negligible, direct control is neither justified nor recommended.

The incipient infestation of the mountain pine beetle in white pine at Mary's Lake in the Mammoth area should be watched closely to detect possible increased losses. Control work should be immediately undertaken in the event this infestation increases.

The annual surveys of the region should be continued to determine the status of current infestations. More frequent inspections would be of benefit in clearing up certain event periods and the seasonal activities of the pine tip moth, the aspen borer, and the Great Basin tent caterpillar. May and June is the season when these seasonal activities should be studied.

SUMMARY

The annual survey of current forest and range insect conditions on the Inyo and Mono National Forests was made by the Bureau of Entomology and Plant Quarantine in September 1940.

The survey was of the extensive type supplemented by close examinations of special areas and cruise of established sample plots. All of the principal timbered areas and main stock ranges were covered.

Barkbeetle infestations in the coniferous forests were subnormal during the year. Losses in Jeffrey pine increased slightly in the Mammoth Lakes region and on the Mono Craters Plateau. There was no change in the status of these infestations in all other parts of the forest. Infestations in the lodgepole pine forests remained the same as in 1939, i.e., decidedly endemic. An incipient infestation of the mountain pine beetle developed during the year in white pine at Mary's Lake. Immediate control work is not recommended in any of these areas.

Current insect conditions in the broadleaf species remained about the same as formerly.

White fir which survived the 1934-1937 epidemic of Oslar's tussock moth continued to die at a relatively lower rate during this, the third year following subsidence of the epidemic. It is estimated that 36 percent of all defoliated trees have died since 1937.

The lodgepole pine needleminer infestation in lodgepole pine in the eastern Mono region has remained static without spreading from previously infested areas.

The pinon pine needleminer in the Casa Diablo area has completed its epidemic cycle and has largely disappeared. Lightly defoliated trees are recovering from the effects of defoliation.

The aspen borer damage increased on several recreational areas during the year. Native poplars and cottonwoods as well as transplants are attacked. Satisfactory control is not feasible at the present time over extensive areas.

The pine tip moth infestation continued unabated in the nut pines near Topaz Lake and south of Gardnerville. Secondary insects are making successful attacks on affected trees.

The Great Basin tent caterpillar epidemic forecast last year did not materialize during 1940. Comparison of tents developed in 1939 and 1940 were in the ratio of 10 to 4 respectively, indicating a reduction of 60 percent in the infestation since 1939.